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ABSTRACT

The rationale for the development of the Primary Pupil Reading Attitude Inventory is presented. The process of developing, using, and subsequently revising the instrument is described. Findings from additional studies are then presented to provide further information about subtest and item characteristics of the instrument. Appendices contain pictures used in the revised version and directions for administration of the inventory. (Author/DI)

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Technical Report No. 206

ASSESSMENT OF ATTITUDES TOWARD READING IN PRIMARY PUPILS

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Report on the Wisconsin Design for
Reading Skill Development, from Project 204
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Statement of Focus

The Wisconsin Research and Development Center for Cognitive Learning focuses on contributing to a better understanding of cognitive learning by children and youth and to the improvement of related educational practices. The strategy for research and development is comprehensive. It includes basic research to generate new knowledge about the conditions and processes of learning and about the processes of instruction, and the subsequent development of research-based instructional materials, many of which are designed for use by teachers and others for use by students. These materials are tested and refined in school settings. Throughout these operations behavioral scientists, curriculum experts, academic scholars, and school people interact, insuring that the results of Center activities are based soundly on knowledge of subject matter and cognitive learning and that they are applied to the improvement of educational practice.

This Technical Report is from the Reading Project in Program 2. The activities of Project 204 are centered primarily around the *Wisconsin Design for Reading Skill Development* (called the *Wisconsin Prototypic System of Reading Skill Development in the Elementary School*). The *Wisconsin Design* represents a systematic attempt to (a) state explicitly an array of reading skills that, by long standing consensus, are essential for competence in reading, (b) assess individual pupils' skill development status by means of criterion-referenced tests with respect to explicitly stated behaviors related to each skill, (c) provide a comprehensive management system to guide grouping for and planning of skill development instruction, and (d) monitor each pupil's progress in the development of specific skills. The comprehensive objective is to provide school personnel with prototypes of the essential components of an individually guided reading skill development program for the entire elementary school.

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Abstract

The rationale for the development of the Primary Pupil Reading Attitude Inventory is presented. The process of developing, using, and subsequently revising the instrument is described. Findings from additional studies are then presented to provide further information about subtest and item characteristics of the instrument.

I
Introduction

Plans for evaluating experimental materials and approaches to instruction frequently include assessment of only one variable, pupil achievement. Although the effects of an experimental program on achievement are of paramount importance, researchers (e.g., Stake, 1967; Tyler, Klein, & Michael, 1971) also recommend consideration of other variables. For example, subjects' attitudes and changes in attitudes are usually ignored. Although attitudes of pupils who are participants in an experimental program are undoubtedly important, they are frequently not studied because few valid and reliable instruments for assessing attitudes exist.

Consideration of pupil attitudes seemed particularly important in evaluating an experimental approach to individualizing reading instruction. The question was whether a diagnostic teaching approach in reading would result in more positive attitudes toward reading on the part of the children involved. To determine an answer to this question, an instrument for assessing pupils' attitudes was needed.

Since the instrument would be used with children in the primary grades, neither reading nor writing could be required. The instrument should also engage the children's interest without obviously revealing the intent. The administration should be simple and quick; group administration, especially to an entire classroom, was preferred.

One of the instruments considered for assessing pupils' attitudes (Macdonald, Harris, & Rarick, 1966) focused on measuring attitudes toward reading as a school subject. The first-grade pupil was asked to choose between reading and another school activity (drawing, writing, doing paper construction work, or doing number work) by marking the picture of the activity that he preferred.

Another instrument (Schotanus, 1967) measured attitudes of primary school pupils toward reading as a leisure-time activity. A picture of a child reading was paired with each of six pictures depicting general types of recreational activities—playing actively outdoors, watching television, playing actively indoors, playing quietly indoors, playing with a pet, and helping a parent. In this case, also, the pupil was asked to choose the picture depicting his favorite activity.

Studying these two previous attempts at devising attitude inventories, the investigator decided that a measure requiring a choice of reading over favorite recreational activities would be more rigorous than one demanding a choice between reading and other school activities. Furthermore, it seemed that the consideration of reading as a leisure-time activity would eliminate reaction to the particular circumstances of reading instruction in the classroom, such as a dislike of the teacher or placement in the lowest group. Therefore, the Macdonald instrument was not considered further.

Second, the decision was made to picture solitary figures to avoid any possible effect from picturing interaction with other people. Since the Schotanus inventory used as a distractor a picture of a child helping a parent, that instrument was also eliminated from further consideration.

It seemed necessary, therefore, to develop a new instrument to assess pupils' attitudes toward recreational reading. The developmental process is described in the next chapter.

II
Development of the Instrument

The paired comparisons format, as used by Macdonald *et al.* (1966) and Schotanus (1967), was chosen for the Primary Pupil Reading Attitude Inventory. The decision was to pair a picture of a child reading with a picture of a child engaged in recreational activities. A child taking the inventory would then be asked to mark the picture of the activity that he would prefer to do in his spare time.

To determine the recreational activities preferred by primary pupils, 20 second and third grade children (including equal numbers of boys and girls, and of good and poor readers as identified by their teachers) were interviewed individually in the spring of 1968. They were asked to name their favorite activities after school and on weekends. The nine most frequently named activities (excluding reading) were then depicted by an artist. Three pictures involving reading were also drawn. Separate versions for boys and girls were devised because it was believed that pictures of like-sexed children would facilitate identification of the subject with the child in the picture. Most of the activities were the same for both sexes except for four of the nonreading activities which, although similar in type, were different for boys and girls. Table 1 provides brief descriptions of the pictures of the activities selected.

Each of the three reading pictures was paired on a page with each of the nine nonreading pictures, forming three subtests. The subject was thus asked to choose between reading and some other activity on 27 pages. Thus, a score of 27 indicated that reading was consistently chosen over the nine other activities; a score of zero indicated that reading was not chosen at all as a preferred activity. Thirteen pages of distractors—choices between two pictures of nonreading activities listed in Table 1—were also included so that the inventory involved a total of 40 choices, 27 of which included reading. The pictures used as distractors were randomly chosen. The sequence of the pairs of pictures (or pages) was also randomly determined.

Validation Study

Although the instrument appeared to have some inherent validity since second and third grade pupils had been interviewed to determine the nonreading activities, a measure of concurrent validity was attempted in the fall of 1968 with a sample of second and third grade children. A validation procedure similar to the one used in validating the San Diego County Inventory of Reading Attitude (1961) was selected. The teachers in the San Diego study were asked to select from their classrooms three students with the best attitude toward reading and three with the poorest attitude toward reading. In validating the Primary Pupil Reading Attitude Inventory, it was decided that the teachers would select the five students in their classrooms who were highest and the five who were lowest in leisure-time reading interest. Some criteria for selection of the students were suggested to the teachers. For example, it was suggested that children who have a high interest in recreational reading may have read more books outside of school than required, may have checked more books out of the school library, and may have discussed the books with the teacher or other students. The criteria suggested for the students who have a low interest in recreational reading were the failure to read books at home, the misuse of library periods, and the display of dislike or lack of interest when recreational reading has been discussed in class.

The Primary Pupil Reading Attitude Inventory was first administered by the investigator

Table 1. Description of the Pictures Used in the Initial Version of the Primary Pupil Reading Attitude Inventory

Boy's Version		Girl's Version	
Nonreading Activities	Reading Activities	Nonreading Activities	Reading Activities
1. Boy playing on monkey bars	1. Boy reading book in living room	1. Girl playing on monkey bars	1. Girl reading book in living room
2. Boy playing with toy cars and trucks	2. Boy reading comic book on bed	2. Girl playing with dolls	2. Girl reading comic book on bed
3. Boy riding bicycle	3. Boy reading book outside	3. Girl riding bicycle	3. Girl reading book outside
4. Boy watching T.V.		4. Girl watching T.V.	
5. Boy swinging on rope		5. Girl on swing	
6. Boy drawing picture		6. Girl drawing picture	
7. Boy building model airplane		7. Girl making puppet	
8. Boy climbing tree		8. Girl jumping rope	
9. Boy going swimming		9. Girl going swimming	

Table 2. Mean Inventory Scores and Standard Deviations for Two Groups of Students Judged to Have Low and High Interest in Recreational Reading

Group	Mean	Standard Deviation	*N*
Low interest, as judged by teachers	5.66	5.08	15
High interest, as judged by teachers	11.0	3.46	15

with the teachers absent from the room to 94 second and third grade children in three classrooms. After introducing herself, the investigator explained that the inventory was not a test, but merely a way of finding out what children like to do after school and on weekends. The children were then shown each of the 12 pictures (three reading and nine nonreading pictures) in the boy's and girl's versions and were told what activity was represented in each picture. To prevent their changing choices, they were told to mark in crayon on each page the picture of the activity that they preferred. They were told not to consider previous choices, but to choose only between the two pictures presented on each page. As each child finished, the booklets were picked up to prevent comparisons among children.

The three classroom teachers who did not know the attitude inventory scores of the children in their rooms were then asked, using the above criteria, to select in their classrooms the five students highest and the five lowest in leisure-time reading interest. A *t* test for independent samples was used to determine if a significant difference between the high and low interest groups existed in the Primary Pupil Reading Attitude Inventory scores. The summary statistics are presented in Table 2.

The *t* test ($t = 3.36$) indicated that the means of the Primary Pupil Reading Attitude Inventory scores of the two groups, identified by their teachers, were different at the .01 level of significance. The mean of the total group of students tested ($N = 94$) was 8.21.

Reliability

A study of the reliability of the initial version of the instrument was done in the spring of 1968. The inventory was administered under the conditions described above to a sample of children in a different school—73 second and third grade pupils in three classrooms. The inventory was re-administered to the same children with the same instructions one week later. A test-retest reliability coefficient was subsequently computed.

The mean score on the first administration of the Primary Pupil Reading Attitude Inventory was 10.20. The mean of the scores when the test was given one week later was 9.49. The test-retest reliability coefficient with a one-week interval was 0.906 which is significant beyond the .001 level of significance.

Revisions of the Instrument

The initial version of the instrument, described above, was used as part of a larger study evaluating the effects of the *Wisconsin Design for Reading Skill Development* after one year's implementation in the primary grades of two schools (Askov, 1970). Spring (1969) attitude scores obtained from second and third grade experimental subjects were compared to those of second and third graders (control subjects) who had the same teachers and took the inventory the previous spring (1968) when their teachers were not using the *Design*. Since the experimental subjects in one school had significantly higher ($p < .10$) scores than the control subjects, the investigator decided to make further study of the instrument with the intention of revising it if necessary.

Data from 154 second and third graders were analyzed separately by grade and sex by the Generalized Item Analysis Program or GITAP (Baker, 1969). Correlations of each reading picture with other reading pictures were also found; then corrections for attenuation were computed. It became apparent that one reading picture—child reading a comic book on the bed—lacked the reliability or internal consistency of the other reading pictures. Therefore, that picture subtest was eliminated, leaving two subtests and making a total of 18 times that reading could be chosen over a nonreading activity. A score of 18 was thus the highest obtainable score in the revised version, and 0 the lowest. One distractor page was also eliminated, reducing the inventory in length from 40 to 30 pages. The sequence of the pages was reordered by a random process.

The pictures used in the revised version are presented in Appendix A. The directions for administration are included in Appendix B. Table 3 shows the pairing of reading with nonreading pictures and the pairing of distractors (using the picture numbers presented in the Appendix) as well as the order of the picture pairs.

Table 3. Pairs of Pictures Presented on Each Page of the Revised Version

Item (Page)	Pictures		Item (Page)	Pictures	
1[a]	3	11	16	5	2
2[a]	4	11	17[a]	7	10
3	6	4	18	6	2
4	9	5	19[a]	1	4
5	5	11	20	4	5
6[a]	4	8	21	6	8
7	9	6	22[a]	3	2
8[a]	7	9	23	10	6
9	6	3	24	5	10
10[a]	11	7	25[a]	11	1
11	5	3	26	6	11
12[a]	8	3	27[a]	10	9
13	1	6	28	1	5
14	7	5	29	6	7
15[a]	2	10	30	8	5

[a]Distractor items in which two nonreading activities are paired.

III
Studies of the Revised Version

The revisions made in the initial version were presented in the last chapter. In this chapter, work done with the revised version is presented. Because the initial version of the Primary Pupil Reading Attitude Inventory had been validated empirically, similar validation of the revised version was not considered necessary. Therefore, the studies presented in this chapter pertain to the reliability of the revised instrument and to investigations of attitude assessment.

Reliability

To gather data in order to study the reliability of the instrument, the revised version was administered in the spring of 1970 in two school systems by the reading consultant of each system. The inventory was given to first and third graders with the assumption that data from second graders would fall between two extremes. The data were then analyzed separately by grade and sex using GITAP (Baker, 1969). Table 4 presents the results of the analyses for each reading picture or subtest and for the total test.

Although the reliability coefficients obtained by this method were considerably lower than the test-retest reliability coefficient (r = .906) obtained for the initial version, they were considered to be adequate, especially since the results were based on fewer items. (When the number of items in a test

Table 4. Reliability Coefficients (Hoyt) for the Revised Version

Subjects	N	Reading Picture Subtest	Reliability	Reliability Adjusted for Test Length
Grade 1 Boys	99	Living room	.573[a]	.801[c]
		Outside	.716[a]	.883[c]
		Total Test	.785[b]	.846[c]
Grade 1 Girls	102	Living room	.676	.862
		Outside	.622	.832
		Total Test	.774	.837
Grade 3 Boys	121	Living room	.711	.881
		Outside	.786	.917
		Total Test	.865	.906
Grade 3 Girls	99	Living room	.661	.854
		Outside	.778	.913
		Total Test	.850	.895

[a]Based on 9 items in subtest
[b]Based on 18 items in total test
[c]Projected on the basis of 27 items

is reduced, usually the reliability or internal consistency coefficient is also lowered.) The test-retest reliability coefficient of the original version was calculated on the basis of 27 items in the total test; the subtest reliability coefficients (for each reading picture), on the other hand, were based on 9 items, and the total test reliability coefficients were computed on the basis of 18 items. Therefore, some decrease in the reliability coefficients obtained is to be expected.

The Spearman-Brown Prophecy Formula was used to calculate the reliabilities which would have been obtained if the subtests and total test were based on 27 items as in the original version. As can be seen in Table 4, these reliabilities adjusted for test length are comparable to the one obtained for the original version by the test-retest method. Therefore, the conclusion was drawn that the lower reliability coefficients of the revised version were due to the decrease in test length rather than to an increase in measurement error.

Since the reliability was found to be at a satisfactory level and since the instrument previously had been empirically validated, the revised version was used in a comparative study which explored the relationship between attitude toward reading and other variables.

Relationship of Attitude and Change in Attitude to Achievement, Sex, and Grade Placement

The investigation of the relationships among variables was carried out at one of the schools which participated in the reliability study. Answers to the following questions were sought: (a) Is attitude related to achievement, sex, and grade placement? (b) Does attitude toward recreational reading change over the summer vacation? (c) Is change in attitude, if any, related to achievement, sex, and grade placement? Therefore, in addition to administering the Primary Pupil Reading Attitude Inventory in the spring, the reading consultant gave it again to the same children in the fall of 1970. Grade equivalent scores on the Word Reading and Paragraph Meaning subtests of the Stanford Achievement Tests, administered in the spring of 1970 as part of the school's testing program, were also obtained.

Relationship of Attitude to Achievement, Sex, and Grade Placement

Analyses of covariance (using the achievement measures as covariates), both univariate and multivariate, were performed on the data. The mean attitude and change scores by grade and sex, with and without adjustment for achievement scores as covariates, are presented in Table 5. Table 6 shows the means and standard deviations of the achievement scores using grade equivalents.

The multiple correlation of the two achievement measures on attitude was .203, significant at the .01 level. Table 7 presents the estimated regression coefficients after the effects of grade, sex, and grade by sex interaction were removed. As can be seen from Table 7, the prediction of attitude scores by Paragraph Meaning scores is statistically significant ($p < .02$) while it is not for Word Reading scores ($p < .60$). Also, it is notable that for Paragraph Meaning the relationship of attitude to achievement is positive—i.e., the higher the achievement level, the more positive the attitude toward recreational reading.

As shown in Table 5, the mean attitude scores for girls in both Grades 1 and 3 were significantly higher ($p < .001$) than for boys both before and after removing the effects of achievement. When achievement scores were used as covariates, grade in school did not have a significant relation to attitude, nor was the grade by sex interaction significant.

Relationship of Change in Attitude to Achievement, Sex, and Grade Placement

To determine the stability of attitude over the period of a summer, a change score—the difference between scores obtained in the spring and fall administrations—was computed for each student. Analysis of variance of the change scores indicated that in general little attitude change occurred during the summer. The possible exception was a slight positive change for girls and a slight negative change for boys.

In studying the relation of sex to attitude change, if the effects of achievement and grade are considered to be zero, the sex difference is not large enough for statistical significance at the .05 level. However, when no

Table 5. Mean Attitude Scores and Change in Attitude Scores Before and After Adjustment for the Effects of Achievement

Grade	Sex: Boys Attitude Score[a]	Boys Change Score	Boys N	Girls Attitude Score	Girls Change Score	Girls N	Total Attitude Score	Total Change Score	Total N
				Before Adjustment					
1	7.13	-0.68	40	11.54	0.86	35	9.33	0.09	75
3	9.00	-0.52	54	15.10	0.56	41	12.05	0.02	95
Total	8.06	-0.60	94	13.32	0.71	76	10.69	0.06	170
				After Adjustment					
1	9.61	-0.45	40	13.45	1.35	35	11.53	0.45	75
3	7.87	-0.57	54	11.83	-0.09	41	9.85	-0.34	95
Total	8.74	-0.51	94	12.64	0.63	76	10.69	0.06	170

[a]Attitude score is an average of the scores obtained for each individual in the spring and fall administrations.

Table 6. Mean Achievement Scores (Grade Equivalents) by Cell and Combined

Sex	Grade	N	Word Reading	Standard Deviation	Paragraph Meaning	Standard Deviation
Male	1	40	1.76	.3974	1.68	.4215
	3	54	3.18	.9325	2.99	.9833
	Total	94	2.57	.7535	2.43	.7951
Female	1	35	1.87	.5334	1.91	.6123
	3	41	3.78	.9311	3.82	1.1381
	Total	76	2.90	.7741	2.94	.9340
Total	1	75	1.81	.4656	1.79	.5191
	3	95	3.44	.9318	3.35	1.0526

Table 7. Regression Coefficients for Covariates

Achievement Tests	Attitude Score[a] Estimated Coefficient	Attitude Score[a] Estimated Standard Error	Attitude Score[a] p	Change Score Estimated Coefficient	Change Score Estimated Standard Error	Change Score p
Word Reading	0.489	1.069	.60	0.370	0.747	.60
Paragraph Meaning	2.218	0.948	.02	0.064	0.663	.92

[a]Attitude score is an average of the scores obtained for each individual in the spring and fall administrations.

restrictions are made, the sex difference is statistically significant ($p < .0001$, $df = 166$). When only the possible effects of achievement are controlled, the sex difference is not significant. Part of the reason for these variations might be that sex difference is confounded with the effects of grade level and achievement, and, of course, the fallibility of the covariate measures. (Although there were more boys than girls in the sample—this difference is greater in Grade 3—girls had a higher mean achievement level. There were also more third than first graders in the sample.) In conclusion, the result of the first test—i.e., when achievement and grade level are ignored—is probably the most trustworthy since neither grade nor achievement is related to change and since that test is the most powerful and is unbiased. Therefore, the sex difference in change in attitude is not considered significant.

Conclusions and Implications

Although definitive conclusions and implications cannot be drawn on the basis of one study, the results do raise interesting questions about the relationships among variables.

Particularly interesting is the relationship between attitude and achievement. With the effects of sex, grade, and grade by sex interaction controlled, attitude scores are positively related to Paragraph Meaning subtest scores but not to scores on the Word Reading subtest. Since the Paragraph Meaning subtest assesses the global reading process while the Word Reading subtest primarily measures vocabulary, a favorable attitude toward recreational reading might indeed be associated with good readers who have few comprehension difficulties.

The other findings are not surprising. Girls have more positive attitudes toward reading than boys, both before and after removing the effects of achievement. This difference is in line with the expectations of role differences between boys and girls. Boys generally are expected to prefer vigorous activities or hobbies over reading; the reverse generally is expected of girls.

Grade placement does not have a significant relation to attitude toward recreational reading. Apparently first graders in this sample had some concept of independent reading and were able to express either positive or negative attitudes toward it.

The findings pertaining to the relationship of change in attitude to achievement, sex, and grade are somewhat uncertain since sex is confounded with the effects of grade level and achievement. However, in general, attitude toward recreational reading tends to remain stable over the summer. The stability of scores might be inferred as another evidence of test reliability. If great fluctuation in scores had occurred, one might question the accuracy with which attitude was assessed.

Investigation of Subtest and Item Differences

In the analyses employed in the previous investigations, the total score on the Primary Pupil Reading Attitude Inventory was used. Investigations of the subtests and items were made to further determine the adequacy of the total score and of the test in general.

Subtest Differences

In using the total score, the assumption has been that although differences may exist between the two subtests—i.e., the two reading pictures—any difference is a constant which does not vary by sex, grade, or achievement level. Since scores on the first subtest, child reading in the living room, were estimated to be 0.45 higher ($p < .02$) than those obtained on the second subtest in which the child is reading outside, the assumption of a constant difference was questioned by testing the hypothesis of no variation with any or all of the factors combined. The results indicate that the difference between the two subtests does not vary significantly at the .05 level with any of the characteristics included in the study ($F = 1.88$, $df = 5/164$). Therefore, it can be concluded that little specificity is lost by using a total attitude score rather than subtest scores.

Item Differences

One means of studying the adequacy of a test is to determine the extent to which there are systematic variations in different responses to items—i.e., the extent to which variations that are associated with subject characteristics are reflected over all items equally. For this analysis, eight between-item contrast variables were formed for each subtest in each administration. These sets were used as dependent variables in multivariate analyses of variance.

The null hypothesis was tested that there are no differences in reflection of change on

Table 8. Mean Item Scores and Sex Differences on the Two Subtests

Living room			Outside		
Item	Mean	Sex Difference	Item	Mean	Sex Difference
3[a]	.6669	-.2390	4[a]	.2094	-.1785
7[a]	.3695	-.3382	5	.3906	-.0734
9	.1433	-.0102	11	.2656	-.0371
13	.1490	.0571	14[a]	.3236	-.2705
18[a]	.3750	-.3028	16[a]	.2296	-.1809
21	.1244	-.0390	20[a]	.3888	-.2010
23	.3098	-.1549	24	.3261	-.1756
26	.4183	-.1694	28	.2621	-.0318
29[a]	.2281	-.2592	30	.1604	-.0710

[a]Items involving reading choices and having different distractors in the boy's and girl's versions. (For example, in Item 3, reading in the living room is paired with playing with dolls in the girl's version and playing with toy cars and trucks in the boy's version.) Item numbers are the same as found in Table 3.

any item for any group regardless of sex or grade after elimination of covariates. The multivariate test resulted in an F ratio of 0.94 with 64 and 585.58 degrees of freedom which was not significant at the .05 level. Therefore, the null hypothesis was not rejected. The null hypothesis that differences in reflection of change, if any, are not related to achievement level was tested by multivariate multiple regression and also not rejected ($F = 0.94$, $df = 32/298$). Therefore, it was concluded from these analyses that the items tended to measure change in the same way.

Since significant item differences in the two test administrations were not found, scores obtained at the two times were averaged to study differences in item means. For both subtests, the hypothesis of no differences among items must be rejected ($p < .001$). The existence of item differences was not unexpected. The assumption that these differences do not vary by characteristics of the subjects is more crucial. Analysis of the interaction of item with grade and sex combined results in an F ratio of 3.02 with 48 and 449.90 degrees of freedom ($p < .0001$). When the variables are split apart, the item by grade and item by sex by grade interactions are not significant at the .05 level although the item by sex interaction is significant ($p < .0001$).

Since responses to the items did vary by sex, the mean of each item was studied to try to account for the differences. The mean and difference between the sexes for each item are presented in Table 8.

The item by achievement interaction was also significant ($F = 1.64$, $df = 32/298$, $p < .02$). When Word Reading subtest scores were considered alone in the regression analysis, the interaction was not significant at the .05 level. However, when only Paragraph Meaning subtest scores were considered, then the interaction was significant ($F = 2.34$, $df = 16/150$, $p < .004$). In studying the item differences on the two subtests, the item by achievement interaction was significant only for the subtest involving reading outside. Thus, item differences vary significantly by Paragraph Meaning scores on one attitude subtest (reading outside).

Table 9 shows the standardized regression coefficient for each item in the item by achievement interaction.

The items which appear to be most positively related to Paragraph Meaning scores involve choices of reading over the following distractors in the living room subtest: swinging (Item 7), painting (Item 13), and watching television (Item 23). In the outside subtest, again swinging (Item 4), painting (Item 28), and watching television (Item 24) are most positively related to Paragraph Meaning in addition to playing with dolls or with toy cars and trucks (Item 20). It thus appears that especially when reading is pictured as taking place outside, children with higher Paragraph Meaning scores tended to choose reading over indoor activities (except making puppets or model airplanes) and over swinging.

Table 9. Standardized Regression Coefficients: Item by Achievement Interaction

Living room			Outside		
	Standardized Regression Coefficient			Standardized Regression Coefficient	
Item	Word Reading	Paragraph Meaning	Item	Word Reading	Paragraph Meaning
3	.2493	.0137	4	-.0026	.3956
7	-.0760	.2492	5	.0398	.1499
9	.0317	.0770	11	.0535	.0535
13	.0676	.3225	14	.0798	.0598
18	.1615	-.0262	16	.1911	-.1256
21	.1242	.0590	20	.0052	.2994
23	-.1673	.2582	24	-.2040	.4095
26	.0566	.0837	28	-.0643	.2956
29	.0400	.1733	30	-.0051	.1052

Conclusions and Implications

Since the difference between the two subtests, formed by the two reading pictures, was found to be a constant, scores on the two subtests may be added together and a total score used as an indication of attitude toward recreational reading.

Item differences were found, however, to vary by sex on both subtests and by Paragraph Meaning scores on the subtest involving reading outside. Both interactions (item by sex and item by achievement) might be accounted for by the distractors which were paired with the reading pictures.

In the item by sex interaction, sex differences occurred primarily on the items which involved different distractors in the boy's and girl's versions. The rationale for using different distractors in the two versions becomes apparent if one considers the manner in which the instrument was constructed. The distractors were chosen on the basis of interviews with primary school children. Many girls, for example, named playing with dolls as a favorite recreational activity; boys, on the other hand, frequently named playing with toy cars and trucks. Since the two activities seemed similar, they were considered as one distractor, dolls being used in the girl's version and toy cars and trucks in the boy's version. Since boys and girls apparently do prefer some different activities—according to the activities named as favorite ones on weekends and after school by the children interviewed—different distractors were provided in the instances where the same activities were not appropriate. The intent was to make the distractors as appealing as possible so that if a reading activity were chosen the child indeed would be expressing positive attitude toward recreational reading.

Since there are sex differences on the items, the implication is that one should block for sex if the instrument is used in an experiment. One should not assume that the instrument is measuring exactly the same variable in boys and girls.

Item differences related to achievement were also found on one subtest—child reading a book outside. Although the Word Reading scores did not significantly contribute to the interaction (item by achievement), Paragraph Meaning scores did. As mentioned previously, a high score on the Paragraph Meaning subtest would probably be more indicative of a good reader on a global reading task than a high score on the Word Reading subtest which primarily measures extent of vocabulary development. Therefore, it is not surprising that Paragraph Meaning rather than Word Reading scores contributed significantly to the item by achievement interaction.

The distractors for each reading picture were studied to account for the interaction. In general, children with higher Paragraph Meaning scores tended to choose reading, when it was pictured outside, over the indoor activities (playing with dolls or with toy cars and trucks, watching television, and painting). The exception was making puppets or model airplanes which was a preferred activity even by good readers. Although swinging is an outdoor activity, reading outside was chosen over swinging by good readers.

The implication of this interaction is that

one might consider achievement when studying attitude using this instrument. However, since significant item differences related to achievement occurred on only one subtest, blocking for achievement, while it might be a good idea, probably is not essential in an experimental design.

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Apendix A
Pictures Used in the Revised Version

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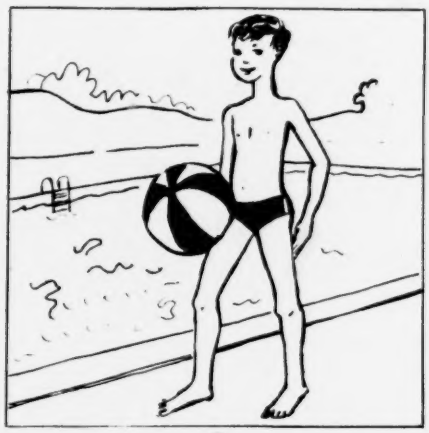

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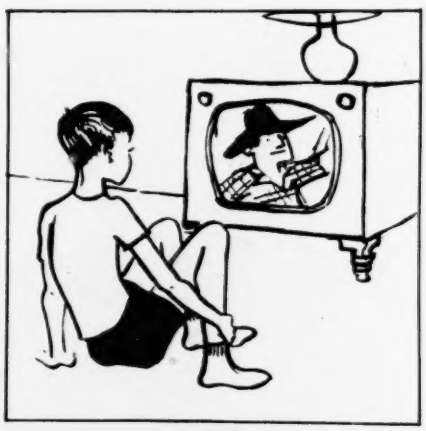

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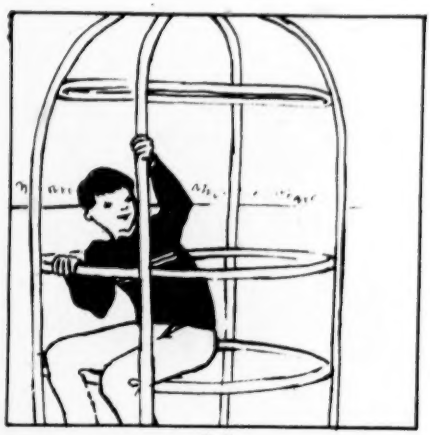

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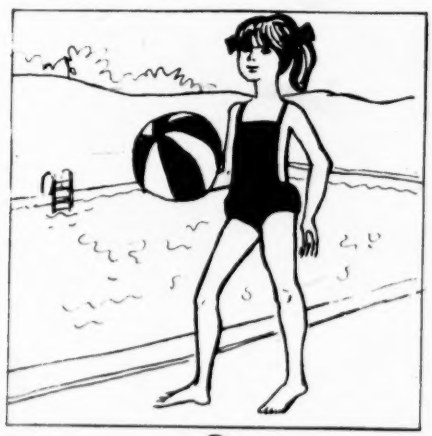

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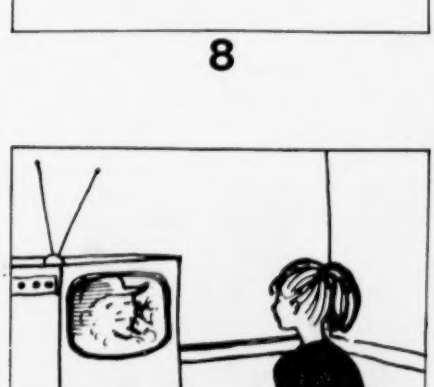

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Appendix B
Directions for Administration

GPO 827-024-3

DIRECTIONS FOR ADMINISTRATION: PRIMARY PUPIL READING ATTITUDE INVENTORY

In the inventory there are 30 pages—or 30 choices between two pictured activities. Of the 30 choices, 18 involve a reading activity. The rest are distractors—choices that don't involve reading.

The pictures representing reading situations are as follows: reading a book indoors (p. 3) and reading a book outside (p. 4). The pictures of other recreational activities are as follows: swimming (p. 1); climbing on monkey bars (p. 1); playing with toy trucks (boys) or dolls (girls) (p. 2); swinging on a rope (boys) or on a swing (girls) (p. 4); riding a bike (p. 6); climbing a tree (boys) or jumping rope (girls) (p. 8); drawing a picture (p. 13); building a model airplane (boys) or making a puppet (girls) (p. 15); and watching TV (p. 15).

Each of the two reading pictures is paired with each of the nine other pictures, making a total of 18 opportunities to choose reading as a favorite activity.

INSTRUCTIONS TO SUBJECTS

Does every girl have a booklet with pictures of girls and does every boy have one with pictures of boys? Now get out a pencil and one crayon. In pencil, print your first and last name, school, grade, teacher, and date. (Put this information on the board.)

First look up here while I go through the pictures so you understand what each one is showing. (Explain what activity is portrayed in each picture both for the girl's and boy's versions. It is helpful to have cut out a picture of each activity to explain to the pupils what each picture represents.)

Now let's look at the first page of your booklet. With your crayon put a big X through the picture of the activity you like best. If you like to climb on the monkey bars better than you like to go swimming, put an X through the picture of the child on the monkey bars with your crayon. If you like to go swimming better than climbing on the monkey bars, put an X through the picture of the child going swimming.

Do the same thing on the rest of the pages. Choose which of the two activities you like to do best on each page and put an X through that picture with your crayon. Be sure you choose only one activity on a page, and be sure you mark one on every page. Don't look back to see what you have chosen earlier—just choose between the two pictures on each page. All of the pictures will appear in your booklet several times so don't worry if some of the pages seem alike.

SCORING

Count the total number of times that reading was chosen over other activities. The highest possible score a child can receive is 18.

GPO 827-024-2

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